

**Eva WERNEROVÁ<sup>1</sup>, František KUDA<sup>2</sup>, Stanislav ENDEL<sup>3</sup>****APPLICATION OF FACILITY MANAGEMENT IN BROWNFIELD CONVERSION****Abstract**

The subject of this paper covers two issues, namely the issue of brownfields and their conversion and the issue of Facility Management, which offers the possibility of applying its principles and tools for extending the benefit of the construction works as a tool for active access to care for the property. This paper aims to link these two topics and to identify the possibility of applying Facility Management in the conversation process of revitalization of brownfields so that subsequent commissioning eliminates the risk of future costly operation and relapse of the revitalized building into the category of brownfields.

**Keywords**

Facility Management, brownfields, conversion, revitalization process.

**1 INTRODUCTION**

The issue of brownfields is still a topic of current importance and new opportunities and ways how to treat them, how to reduce their impact on the environment and how to breathe new life back to them are investigated [3]. This chapter will focus on brownfields using Facility Management.

It aims to highlight the interdependence of the problems of the performance of property management, i.e. the introduction and operation of the Facility Management services in terms of technical and economical property management and brownfield revitalization process.

In a situation where an investor focuses attention to a particular brownfield, and its revitalization begins to be considered, an opportunity opens for Facility Management to accompany it during the whole revitalization process, and after its completion, to be present at the beginning of the new use, when it will be targeted to manage not only its structural and technical condition [15, 19].

This chapter has been motivated by the current status of the situation, when, on the one hand, there are items of property that are not used and maintained and no one is interested in them, and, on the other hand, an effective approach of property management solution comes into consideration that supports the sustainability of buildings and specifically addresses the extension of the structure lifespan and the ensuing benefits. This chapter describes how the principles of Facility Management can be applied in the brownfield revitalization process, especially if the brownfield is a structure, a building (industrial, agricultural, commercial, and residential). The chapter describes possible methods and activities that can be applied at various stages of the revitalization process.

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## 2 FACILITY MANAGEMENT

For administrators, the issues of approach and deciding on technical and economic variants of technical management and maintenance of property are sensitive and in many respect the weak point of technological and economic solutions [1]. In many cases, the decision is based only on routine experience of key management personnel, and current requirements of the surroundings [16]. The deficit is mainly multidisciplinary integration within the context of technological and economic decision (strategic decisions of administrators, public investors, developers, etc.) [8].

Facility Management is a set of mutually integrated activities that cover all activities related to the comprehensive property management. It includes all activities of property management that lead to securing and developing the agreed services, thus supporting and improving the efficiency of basic activities related to property. Facility Management is understood comprehensively as systemic and integrated action defined in ČSN (Czech National Standard) EN 15 221-1 in two basic areas shown in Tab. 1, namely “space and infrastructure” and “people and organizations”.

| People and Organizations                 | Space and Infrastructure             |
|--|--------------------------------------|
| Health, safety and security              | Housing and spatial services         |
| Care for users of building               | Workplace                            |
| Information and communication technology | Technical Infrastructure             |
| Internal logistics                       | Cleaning                             |
| Other people and organization            | The rest of space and infrastructure |

Tab. 1 Structure of FM services grouped into two main areas (Source: ČSN EN 15 221-1)

Facility Management incorporates principles of many different disciplines – business administration, architecture, humanities and sciences – and thanks to this, it approaches property management as a whole [9]. Further development of FM also envisages organized creation of conditions, in particular new innovative approaches to access knowledge, among them modern models of the dynamics of technological and economic processes, decision-making processes and their application in technological and economic disciplines. [14,18]

## 3 THE PROCESS OF BROWNFIELD REVITALIZATION AND FACILITY MANAGEMENT

Revitalization process could be divided into several phases, which are [6, 11]:

- Pre-revitalization phase,
- Phase of preparation for future use,
- Phase of implementation of revitalization,
- Exploitation phase.

Each phase is characterized by its actions realized in the individual stages. From the perspective of FM, these actions support through their content the main activities of the revitalization process.

### 3.1 Pre-revitalisation phase

In this phase, the object of revitalization is known, or brownfield, for which the project of future use will be prepared in the next phase. At this stage, Facility Management plays a role in the security of the existing building; it ensures the protection of property by a security agency, which protects the building against theft and devastation and communicates with the agency.

From the guarded building, items of technical equipment are not lost, nor does devastation occur that changes the current structural and technical condition of the building [7]. One of the FM tools – passportization - helps to detect the current structural and technical condition of the building. Passportization made even in rough outline is sufficient to create the basic idea of the building and reveals its structural weaknesses, which must be detected before the realization (ceiling structural damage, damaged load-bearing walls, mildew and rot, non-functioning internal energy distribution etc.) [10].

At this stage, Facility Management helps to maintain the current status of the brownfield unchanging and detect threats that threaten its status. Mainly the services of security agencies are used to protect a brownfield against physical devastation and theft, together with passportization, which records the current structural and technical condition. At this stage, the Facility Management principles lead to the need to ensure so called emergency maintenance, preventing potential deterioration of the structural and technical condition of the building.

### **3.2 The preparatory phase for future use**

Planning for the future use of a brownfield is time- and cost-intensive process, therefore the outcome of these preparations has to be more than satisfactory [4]. This phase utilizes and builds on the results of the previous pre-revitalisation phase, where the investor proceeds from data obtained through passportization and has a specific idea of the space, equipment and the current state of the building [5].

The phase of preparation for the future utilization prepares and gets ready all that is needed to start brownfield revitalization. When considering the possible further utilization, it is necessary to investigate interior spaces and invite specialists in the field of space management, which is able to prepare studies of the optimal use of interior space to ensure operational efficiency in the exploitation phase [13].

If the facility manager can actively participate in decisions about the future use and in preparing a proposal, it is a great advantage for the future in the operation [17]. The facility manager always evaluates the submitted project in terms of future use and operation, and can reveal weaknesses of the proposal already in the preparatory phase and propose optimal solutions.

### **3.3 The implementation phase of the revitalization phase**

Revitalization according to the documents, which emerged from the previous phase, is a key phase [2]. The planned proposals are realized and the brownfield is transformed into a building that will come alive again. At this stage, from FM perspective, another important step of the whole process is taken, documentation that will accompany the new building during the next stage is produced. It is documentation of actual construction, which will store information about the building throughout its lifespan.

During realization of revitalisation, the facility manager is not as active as in the previous phases, but it does not mean that s/he should be completely excluded during this phase. The facility manager's role is particularly effective in solving construction changes, if there are any, or in the preparation of future space for use when already during the revitalization process, it is possible to draw up lease contracts with the future users or deal with other administrative activities [20].

### **3.4 Exploitation phase**

Culmination of the whole process of revitalization is the exploitation phase, a phase when the building begins to be used. At this stage, the owner of the building decides how to operate the facility, whether using its own resources, or through the facility manager, or whether the building will be sold [12].

For the facility manager, this is the most important phase. Now the whole operation and use depend on his/her abilities. When operating the building, the facility manager has tools at his/her disposal that can effectively manage supporting processes and plan effective management and maintenance.

## 4 CONCLUSIONS

Linking the issue of brownfields with the Facility Management principles opens up a new way of dealing with revitalization of these neglected properties. In the revitalization process, Facility Management ensures all support services for achieving the targets and, at the same time, under the facility manager's supervision, the future proposal for utilisation can be consulted from the economic and operational point of view. The experienced facility manager is able to combine finding a suitable new use and implementing it so that in the future, the requirement to minimize operating costs while maximizing utility is met; the facility manager can use his/her life experiences to predict operational relationships, needs and circumstances. By enabling Facility Management to participate actively already in the preparation of a new project, it helps to eliminate errors in the proposal that would not be seen until the exploitation phase.

An example of a well-managed revitalization is the revitalization of the former MILO Olomouc a.s. plant, see Fig. 1. The former area for the production of soaps, hydrogenated oils, etc. has been transformed into the largest shopping centre in the Czech Republic, where Facility Management already cooperated before opening.



A



B

Fig. 1: Revitalization of the complex MILO Olomouc a.s., A – the brownfield before the reconstruction, B – the revitalized area OC (shopping centre) Šantovka.  
(Source: Daniel Mazáč, Metrostav a.s.)

Past experience suggests that the issue of FM application has been highly underestimated and insufficiently considered by the professional public. The big problem remains the mutual ignorance of the individual components involved in the technical FM and lifecycle predictions. It mainly represents technical and economic resultant of the life cycle of any buildings throughout its course. Without a comprehensive approach, the effort to extend the service life, to reduce the impact of buildings on the environment, and to reduce future costs of revitalized buildings will remain just a vision.

This chapter describes the general areas of Facility Management, with its aims and content. Facility Management as a dynamically developing area offers a wealth of applications and uses in managing not only property but also in the preparation and actual revitalization of brownfields. The aim of the chapter was to outline and highlight these options that would greatly facilitate the process of revitalization in the application of addressing the issue of brownfields. The big advantage of the involvement of Facility Management and especially the facility manager in this revitalization process is the future management of the new building, which is created at the time of the first conceptual proposals and which follows up the resulting proposal. If the possibility of FM involvement is ensured already at the beginning of the process, it is easier to handle operational situations and

strategic management in the future. It means that the future facility manager lays down the conditions under which it is possible to effectively manage the future new building early in deciding on a new use of the brownfield, thereby contributing to achieving sustainability of the building. Careful management and due diligence eliminate the risk that the revitalized building became a brownfield again.

It is a question of time, as well as openness of investors to what extent this way of dealing with brownfields is solvable.

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